THE BIG SWITCH

POWERING CANADA'S NET ZERO FUTURE

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CANADIAN CLIMATE INSTITUTE
L'INSTITUT CLIMATIQUE DU CANADA

01 *The big switch*

Clean electricity will power Canada's net zero transition.

Reaching Canada's climate targets requires a *big switch* from fossil fuel energy to clean electricity. This switch involves producing more clean electricity in every region, phasing out greenhouse gas-emitting sources, and using clean electricity to power more and more of our homes, vehicles, businesses, and industries. It will underpin Canada's climate progress and power Canada's future prosperity.

Getting there, however, will require governments at all orders to leverage their policy tools—ideally in a coordinated way.

The Canadian Climate Institute's electricity project—including this summary report and the two detailed reports on which it's based—explores both the technical and policy changes needed to align Canada's electricity systems with net zero, detailing the technologies needed to build electricity systems that are *bigger, cleaner, and smarter* (*Section 2*), and identifying the policies needed to bring about an *electric federalism* that can drive Canada's big switch (*Section 3*).

1.1 *Net zero and the big switch*

In our 2021 report *Canada's Net Zero Future*, the Canadian Climate Institute found that clean electricity and electrification—substituting fossil fuels with clean electricity to power more and more of our economy—underpin *all* credible economy-wide pathways to net zero (Dion et al. 2021). We found that electricity will play a central and driving role even under best-case scenarios for emerging alternative technologies. Similar studies in Canada and abroad confirm the importance of electricity in achieving net zero (EPRI 2021; ETC 2021; IEA 2021; Langlois-Bertrand et al. 2021).

This *big switch* is key to reaching Canada's climate goals: getting this right makes everything else that's required for Canada's net zero transition much more possible, affordable, and broadly beneficial.

The big switch means producing a lot more clean electricity, for two reasons. One is to replace unabated coal and natural-gas-fired electricity as they are phased out. The other is to meet the growing need for clean electricity as Canadians switch from gasoline-powered vehicles to electric vehicles, gas stoves to induction stoves, and natural gas furnaces and boilers to heat pumps and electric furnaces. (See *Figure A* for the impact these changes will have on household energy sources.)

In addition to making electricity systems bigger and cleaner, the big switch also requires making them smarter. This means making both supply and demand more flexible to support more variable supply such as solar and wind and to respond to changing weather conditions and disruptions—including from extreme weather events driven by climate change (Clark and Kanduth 2022).

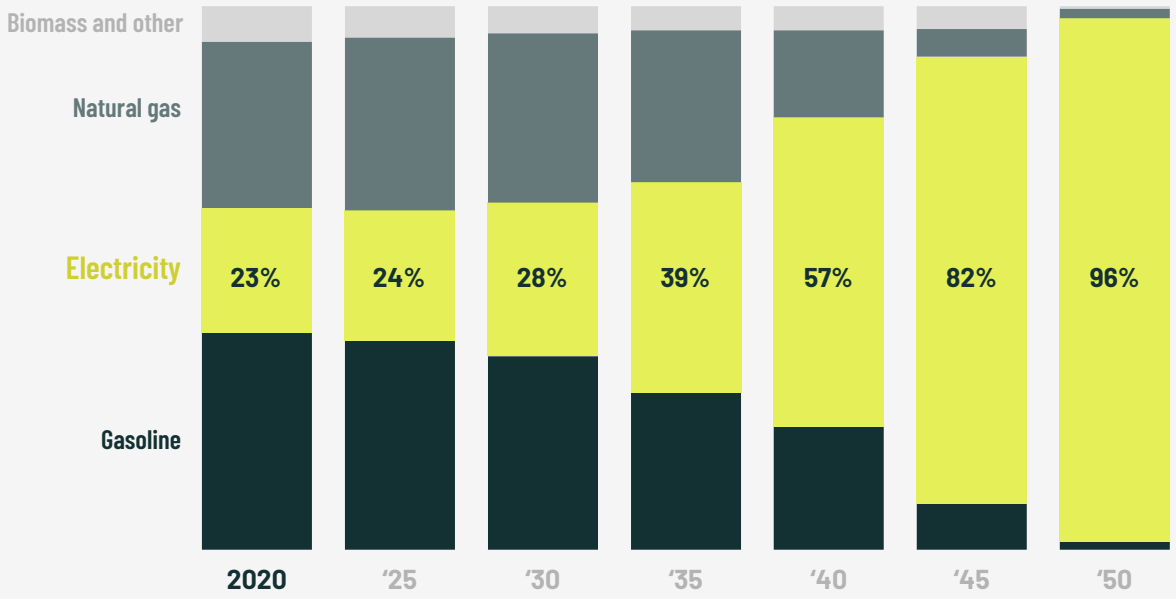
A focus on electricity systems

Our reports focus specifically on electricity systems and what is needed to make them bigger, cleaner, and smarter. Electricity systems refer to the various networks of infrastructure, institutions, and players associated with the generation, transmission, and distribution of electricity in Canada, along with the demand-side technologies and interventions that can help shift and reduce demand to minimize the need for more supply. We speak of systems, plural, recognizing that Canada does not have one single electricity system but rather numerous regional systems that are primarily managed at the provincial and territorial levels.

FIGURE A.

To support net zero, household energy use will shift away from natural gas and gasoline toward electricity

Average household share of energy consumption by type



Source. Dion et al. 2021.

1.2 *The stakes in transforming Canada's electricity systems*

Because the switch we're discussing impacts how nearly every Canadian household and business will use energy, the policy choices that Canadian governments make to align electricity systems with net zero are extremely consequential. Getting it right—or wrong—will have big implications far beyond the electricity sector, for the reasons that follow.

1. Multiple studies have reached the same conclusion: **Acting early with smart policies can significantly reduce overall costs and make achieving net zero easier.** Electricity transformations will require significant capital investment. Early and effective action, including initiatives to make electricity systems more resilient to

the effects of climate change, allows Canada to avoid a more difficult transition later, which would entail higher consumer prices from stranded assets and from underbuilt systems struggling to keep up with growing demand. Acting now also reduces overall costs by driving innovation, which can improve the cost and availability of important technologies and accelerate learning curves through deployment and use. Finally, the federal government's 2035 deadline for achieving a net zero electricity system leaves no room for delay.

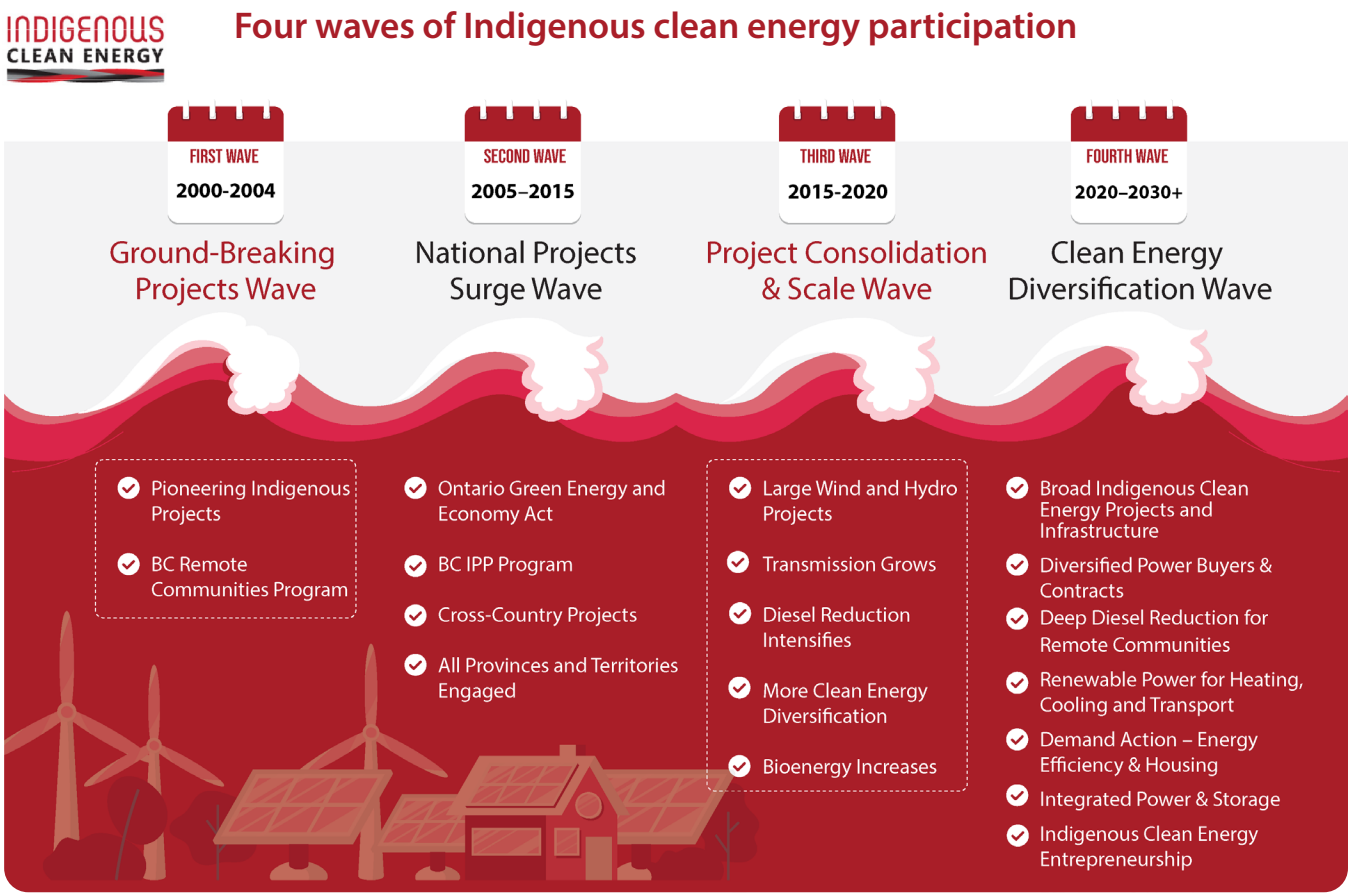
2. **Strategic action today can unlock clean growth opportunities.** According to the Climate Institute report *Sink or Swim* (Samson et al. 2021), Canadian companies active in low-carbon electricity, batteries and storage, and solar and wind equipment are well-positioned to grow in the global low-carbon transition. New sources of transition-consistent growth can offer export opportunities, employment, and prosperity for Canadians.

3. **Electricity system transformations can be pursued in ways that support equity.** Absent equity-focused policy interventions, utilities' investments in new technologies and infrastructure upgrades could increase electricity rates in ways that disproportionately impact lower-income households. Ensuring rates remain reasonable for low-income households (alongside measures to support households' ability to adopt electrification technologies) could help address these potential inequities.

4. **Catalyzing Indigenous participation and leadership can support Indigenous self-determination and reconciliation.** Indigenous communities, governments, and organizations across Canada have positioned themselves as leaders in Canada's clean energy transition. Clean energy projects represent an important means of advancing not only energy transition but reconciliation and the rights and well-being of Indigenous Peoples. As Indigenous Clean Energy describes in *Waves of Change: Indigenous clean energy leadership for Canada's clean, electric future*, the next wave of Indigenous participation and leadership in the sector will present significant new opportunities for Indigenous communities in Canada (see *Figure B*) (ICE 2022).

While the stakes are high, Canada is fortunate to have significant advantages to draw on in this transition. Over 80 per cent of electricity

FIGURE B.



Source. ICE 2022.

production in Canada is already non-emitting, in significant part due to the country's abundant hydroelectric resources (Statistics Canada 2022). And electricity systems across the country are supported by robust institutions and structures that deliver electricity that is reliable and affordable by most international standards. Building on these advantages can ensure Canada meets its climate goals while strategically positioning its economy to succeed in the global low-carbon transition.

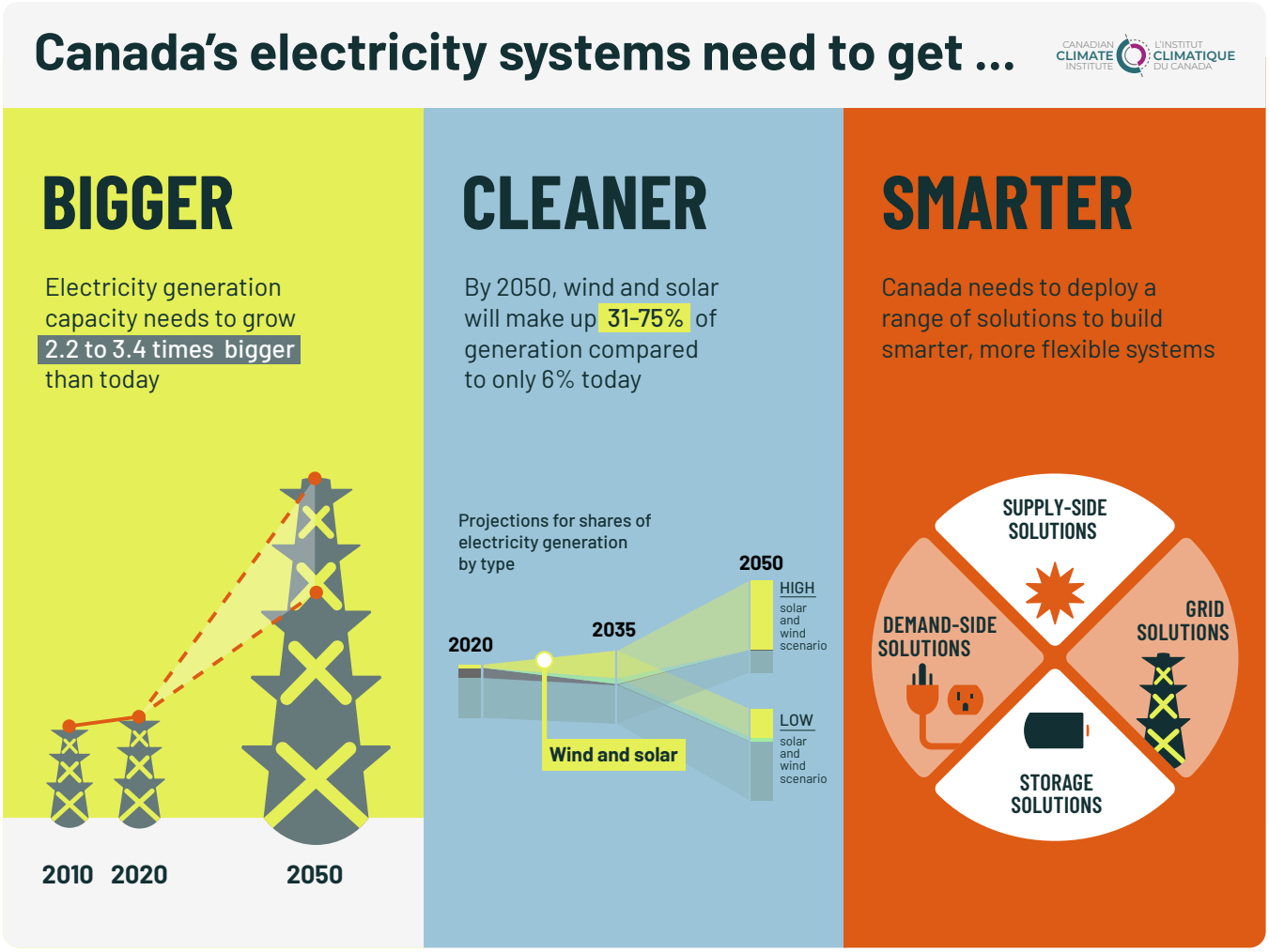
That doesn't mean that the big switch will be easy. Building out bigger, cleaner, and smarter electricity systems in every province and territory is a massive undertaking. Doing so will require grappling with the fact that different provinces and territories have unique electricity systems that face unique challenges. And it will require implementing policies that create outcomes that are effective, cost-effective, and fair.

02 *Powering the switch: Bigger, cleaner, and smarter electricity systems*

This section summarizes the findings of our technical report *Bigger, Cleaner, Smarter*, describing the changes needed in Canada's electricity systems to align them with net zero. Our report draws on a review of the most significant recent studies of electricity system transformation in Canada, as well as our project's widespread consultation with experts, thought leaders, and practitioners (see *Annex*). Overall, we find that transformation of electricity systems is both achievable and necessary to support the goal of net zero emissions economy-wide by 2050. In particular, aligning electricity systems with net zero requires attention to all three changes—bigger, cleaner, and smarter—not just the most obvious change of becoming cleaner (i.e., getting electricity generation to net zero). (See *Figure C.*)

We unpack each of these changes below.

FIGURE C.


Canada's electricity systems need to get ...
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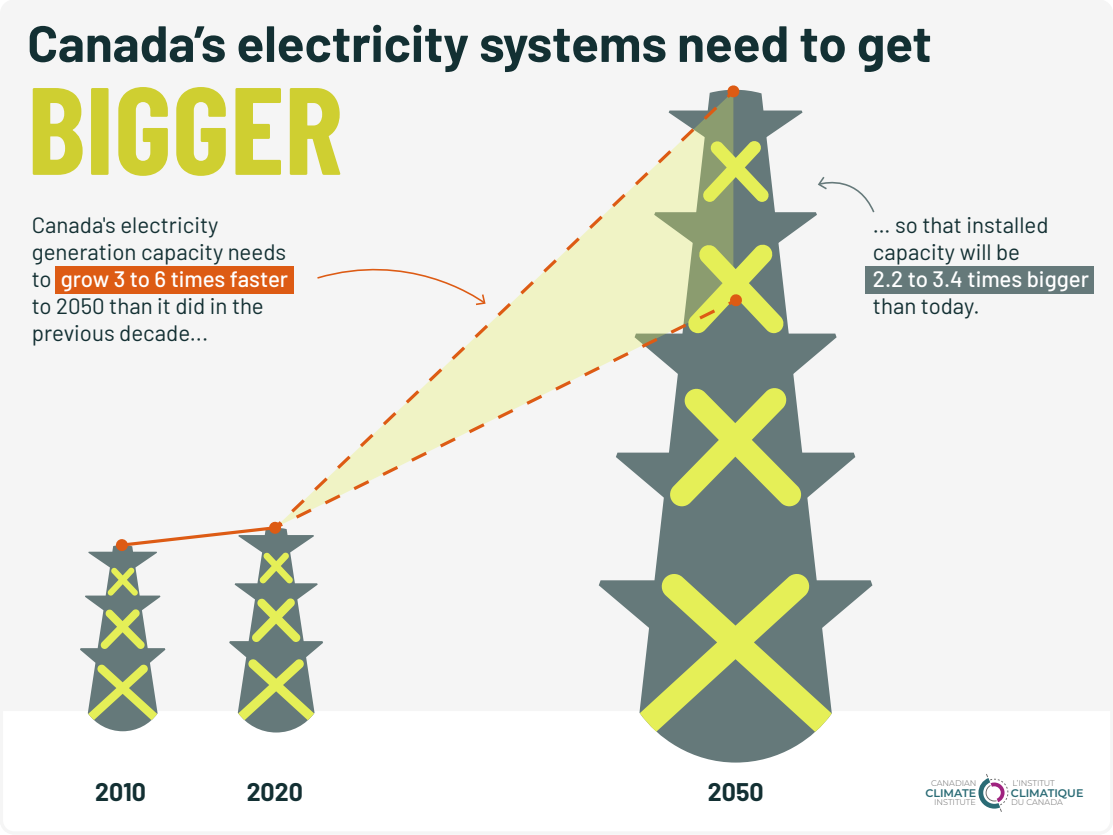
BIGGER
Electricity generation capacity needs to grow 2.2 to 3.4 times bigger than today
2010
2020
2050
CLEANER
By 2050, wind and solar will make up 31-75% of generation compared to only 6% today
Projections for shares of electricity generation by type
2020
2035
2050
HIGH
solar and wind scenario
LOW
solar and wind scenario
Wind and solar
SMARTER
Canada needs to deploy a range of solutions to build smarter, more flexible systems
SUPPLY-SIDE SOLUTIONS
GRID SOLUTIONS
DEMAND-SIDE SOLUTIONS
STORAGE SOLUTIONS

2.1 *Bigger*

Making electricity systems *bigger* means growing them so they can meet the increased demand created by widespread electrification. Specifically, studies show that electricity demand will be 1.6 to 2.1 times larger in 2050 compared to today, on a path to net zero. Meanwhile, the capacity of Canadian electricity systems—the maximum amount of electricity that a system can technically produce—needs to grow even more, at least doubling, if not more than tripling, over the same time frame.[1] Aggressive improvements in energy efficiency are needed so Canada's electricity systems meet electricity demand that is "right sized." Yet even with significant efficiency improvements, electricity systems must grow substantially for a net zero world. In fact, Canada must, on average, grow system capacity at a rate 3 to 6 times faster to 2050 compared to the previous decade, in order to support rising electricity demand associated with net zero (see *Figure D*).

1. Generation capacity or simply capacity is the maximum amount of electricity that a generator or system can produce, measured in watts (e.g. MW, kW). It measures the technical capability to produce electricity. This stands in contrast to generation, which refers to the actual amount of electricity produced during a certain time period, measured in watt-hours (e.g. kWh, MWh). Capacity grows more than generation (and demand) in large part because future electricity systems will have higher shares of solar and wind, which require more capacity to produce the same amount of electricity compared to thermal sources because of their greater variability.

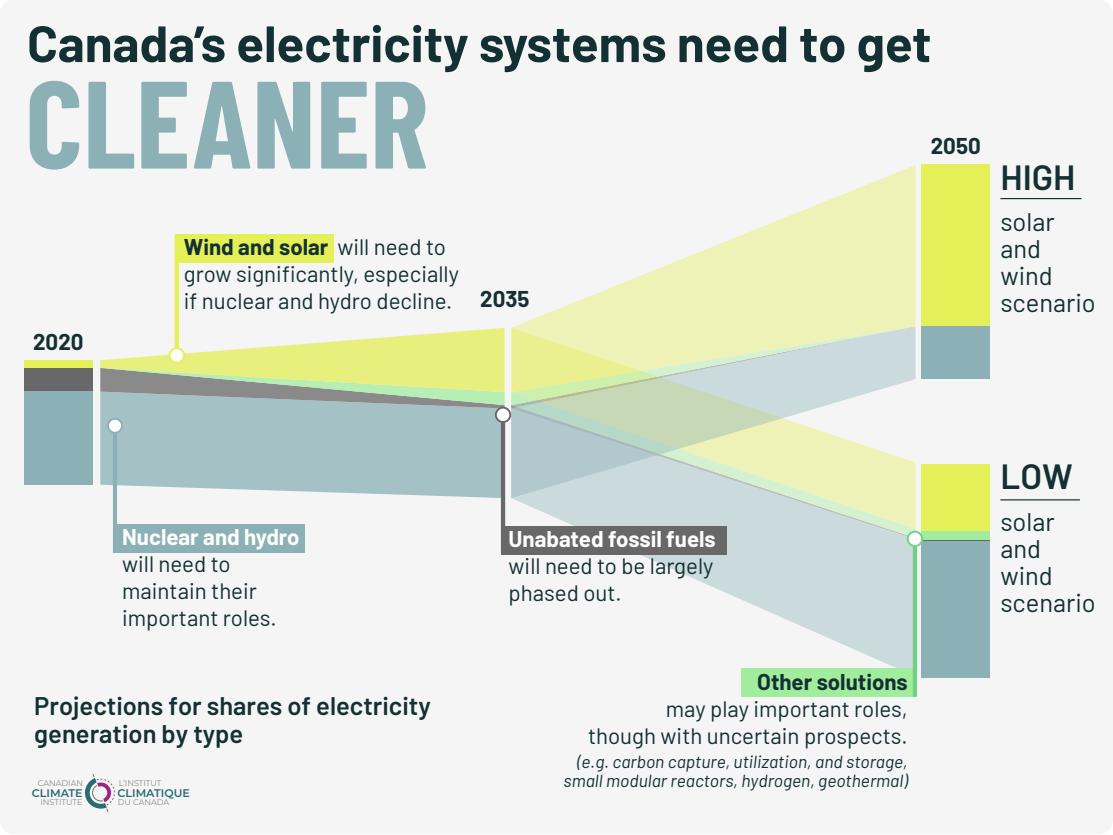
FIGURE D.



2.2 *Cleaner*

Making electricity systems *cleaner* consists of three broad elements (see *Figure E*). The first is the phase-out of generation from unabated fossil fuels, which studies show will make up no more than one per cent of total generation by 2050. Second, to replace these sources and grow systems further, accelerating growth of non-emitting electricity—especially solar and wind—is central. For instance, studies show that to support net zero, 60–95 per cent of new capacity added by 2030 must come from solar and wind. Third, hydro and nuclear power will need to maintain their important roles; otherwise, other sources of non-emitting electricity must grow even more. Several nascent technologies have high potential. These include carbon capture, utilization, and storage applied to emitting generation; small modular reactors; and hydrogen-fired electricity generation. However, there is higher uncertainty around their future role.

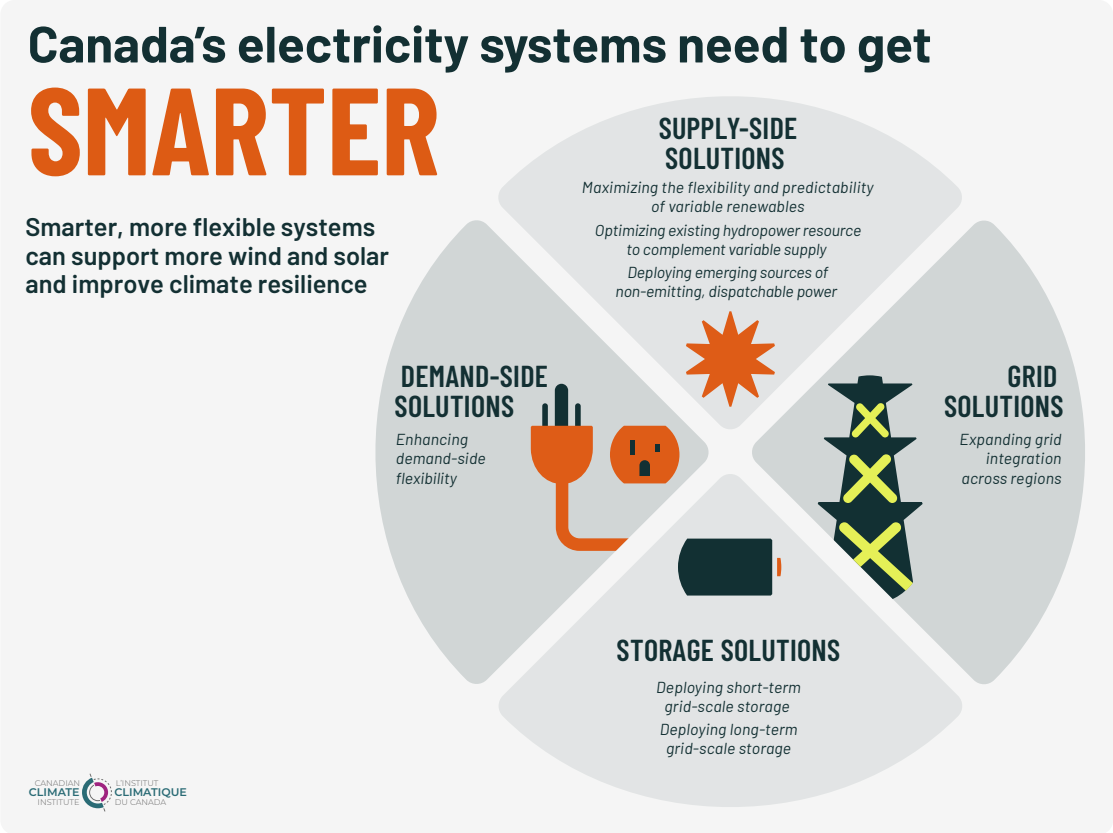
FIGURE E.



2.3 *Smarter*

Making systems *smarter* entails deploying a range of solutions so systems can become more flexible to support more solar and wind—as well as more resilient to the effects of climate change (Clark and Kanduth 2022). Supply-side sources of flexibility that can generate power on demand (hydropower in particular) will play a critical role. But other types of flexibility solutions will grow in importance on the path to net zero. Making demand for electricity more flexible, balancing out the grid with a range of sources of non-emitting electricity, scaling up the deployment of electricity storage, and enhancing integration across regions and trade of electricity through interties can all play valuable roles in a net zero future (see *Figure F*). Many of the key flexibility technologies are commercially available today. And their costs continue to fall.

FIGURE F.



2.4 *Takeaways for Canada*

Here are four takeaways from this analysis that inform the policy recommendations provided in Section 3:

1. **Aligning electricity systems with net zero is both necessary and achievable**. Making electricity systems bigger, cleaner, and smarter is technically and economically feasible. The resulting systems can reliably and affordably power Canada's economy. Moreover, because electricity underpins decarbonization across the economy, a broader transition to net zero would be far more challenging absent a transformation of electricity systems.

2. **Transformations will vary across Canada: regions without abundant hydropower resources face different challenges than those that are hydropower-rich**. The presence or absence of significant hydroelectricity resources has a particularly strong impact on the challenges each region will face. Regions without significant hydropower face challenges of decarbonizing existing supply *in addition* to growing their systems. And not having significant hydroelectricity as a domestic source of dispatchable power means they need to rely more on other sources of flexibility.

3. **Some solutions face technological barriers, while many others face social, political, or institutional ones**. Technological readiness is an important challenge for the advancement of some solutions, such as carbon capture, utilization, and storage and small modular reactors. But some of the most significant barriers to other solutions are social and institutional in nature (e.g., barriers to interregional grid integration, community acceptance of local renewable energy development). Policy to support the transformation of electricity systems needs to address both the technical and non-technical barriers to the deployment and uptake of key solutions (Turner 2021).

4. **Governments have a driving role in these transformations**. To advance the critical challenge of making electricity systems bigger, cleaner, and smarter, policy interventions from different orders of government will be required. Provincial and territorial governments are central in developing policy, given their authority over electricity systems, while the federal government can set the national policy framework and act as an enabler of regional

progress. Meaningful involvement of Indigenous Peoples in policy making and key decisions will also be required to achieve successful transformations and to ensure Indigenous Peoples continue to take a leading role in identifying and seizing clean energy opportunities (ICE 2022).

The key takeaways are these: the changes that are needed to align Canada's electricity systems with net zero are clear, acting quickly is much better than acting slowly, and the technical solutions required are already available. The most important thing now is that Canada gets on with the task ahead: building clean supply, especially solar, wind, and storage; phasing out generation from unabated fossil fuels; and making systems more flexible. Moving rapidly toward net zero requires that policy makers recognize the centrality of clean electricity in getting Canada there, and act accordingly.

The next section presents a policy package designed to do just that.

03 *Flipping the switch: Policy recommendations for electric federalism*

This section summarizes the findings and recommendations from our second report, *Electric Federalism*, which identifies how Canadian governments can drive the transformations required in electricity systems across the country to achieve net zero. We identify four key challenges and outline the policy solutions that can overcome them. To create an affordable, reliable electricity system that is consistent with net zero, provincial, territorial, and federal governments should work together.

3.1 *Four challenges in aligning electricity systems with net zero*

1. **Federal climate policy in the electricity sector is not currently aligned with net zero goals**. Canada has set a target of reaching net zero emissions in the electricity sector by 2035 and in the economy more broadly by 2050. While governments across Canada have made significant progress toward these goals, significant gaps remain—especially regarding how policies are applied in the electricity sector. Federal climate policy in the electricity sector (in particular, the output-based treatment of electricity under federal carbon pricing) does not provide sufficient incentives for non-emitting generation and has weak incentives to ramp down use of unabated natural gas-fired electricity. It also does not rule out the construction of new gas-fired capacity,

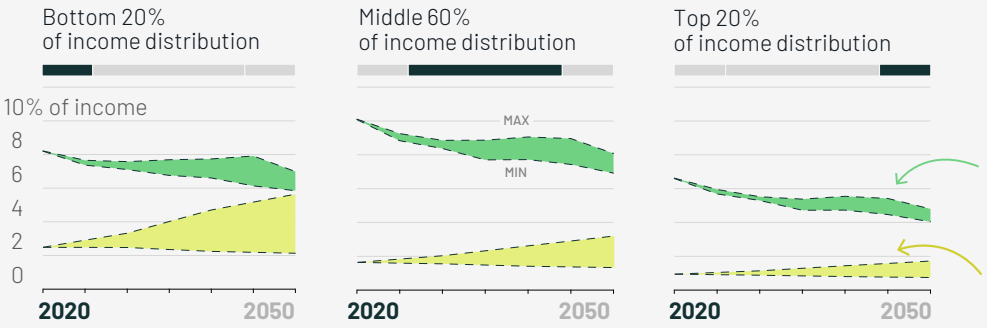
which would risk becoming a stranded asset and could put climate targets out of reach.

2. **Creating resilient electricity systems aligned with net zero could put upward pressure on electricity rates.** While rising expenditure on electricity would be offset by falling expenditures on other types of energy, electricity rates might still increase in some regions under some scenarios (see *Figure G*).

FIGURE G.

Canadians will spend less of their income on energy, but without a new approach, electricity rates could still go up

Energy will become cheaper for Canadians overall...



Projections show that households across all income groups in Canada will see falling overall energy costs as a share of income — even as their use of electricity rises.

Share of total energy spending (natural gas, gasoline, electricity, furnaces, vehicles, etc.)

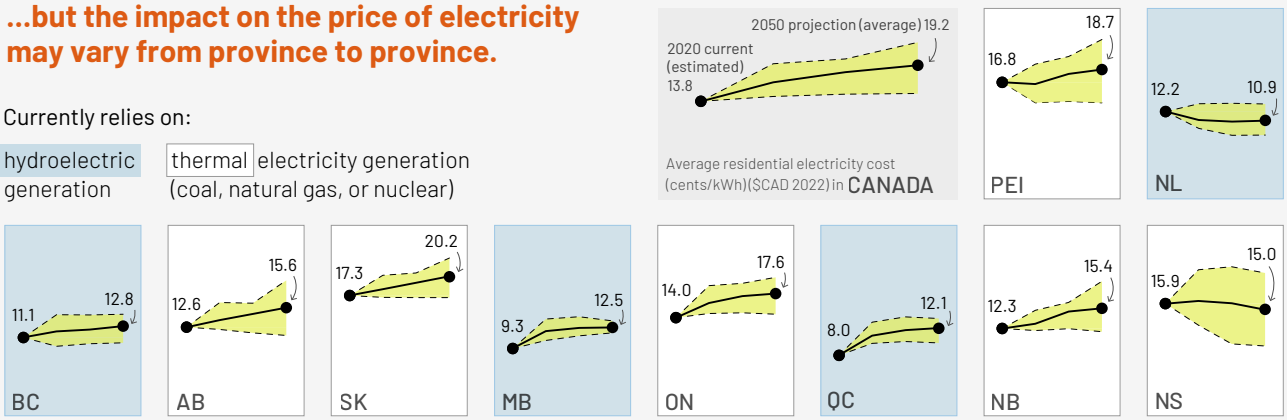
Share of spending on electricity alone

...but the impact on the price of electricity may vary from province to province.

Currently relies on:

hydroelectric generation

thermal electricity generation (coal, natural gas, or nuclear)



Electricity rates might modestly increase—or even decline—given the decreasing costs of renewables and storage. But in some regions, in some scenarios, rates could increase more significantly as Canada modernizes its electricity systems. Smart policy can mitigate these potential rate increases and help keep electricity affordable for Canadians.

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Sources: Dion et al. (2021); Dolter, Winter, and Guertin (2022).

This risk raises a number of concerns. Higher rates may disproportionately impact lower-income ratepayers, potentially exacerbating energy poverty. Investment costs may be unevenly distributed across regions, with residents in provinces and territories that rely on fossil fuel generation experiencing higher rate increases. Higher rates could also undermine the economic case for end-use electrification, which is critical to achieving net zero. And, critically, rising rates could undermine public and political support for the broader net zero transition. For these reasons, proactively mitigating potential upward pressure on rates can support a smooth net zero transition.

3. **Provincial and territorial policies and institutions are not sufficiently coordinated with net zero**. To align electricity systems with net zero goals, provincial and territorial policies and institutions—including regulators, system operators, and public utilities—must be coordinated with this goal. Yet, their mandates as they relate to climate change are often unstated or ambiguous and can be interpreted as being at odds with net zero investments. The most direct way to address this would be for federal, provincial, and territorial governments to provide greater policy certainty to 2050. However, gaps between existing policy and long-term goals are likely to persist. This poses a significant challenge, as regulators and other provincial institutions are not in a position to make assumptions or decisions about governments' future climate policy.

4. **Incentives for interregional coordination and interties are weak**. In Canada's decentralized federation, electricity systems are managed by provinces and territories, and there is no central governing authority. While enhanced integration and coordination between neighbouring electricity systems represents a cost-effective path to aligning Canada's electricity systems with net zero, systems remain largely siloed. In addition, a number of formal and informal barriers to integration exist in provinces and territories, including policies that limit or disincentivize interregional integration and trade, institutional cultures that undervalue coordination, and simple inertia.

3.2 *Recommendations for building electric federalism*

To address these four challenges, both federal and provincial/territorial orders of government have policy levers they can pull. Addressing the full set of challenges and successfully aligning Canadian electricity systems with net zero requires policy to be implemented by both of these orders of government, ideally in a coordinated way.

We have identified five key recommendations for how provincial, territorial, and federal governments can apply their respective policy levers to transform Canadian electricity systems. These recommendations are discussed in more detail in the *Electric Federalism report*.

A. The federal government should strengthen climate policies in the electricity sector

First, the federal government should strengthen federal carbon pricing policy by doing away with the output-based pricing system in the electricity sector and returning all carbon price revenues from electricity to provincial and territorial ratepayers. This approach would strengthen emissions reduction incentives while both protecting consumers and avoiding large interprovincial transfers.

Second, the federal government should employ a clean electricity standard alongside strengthened carbon pricing to support the switch to non-emitting electricity sources and ensure delivery on the 2035 net zero target. Such a standard should rule out construction of new gas-fired capacity and ensure that all generation is net zero as of 2035, while still letting market incentives from carbon pricing play a driving role in delivering cost-effective emissions reductions.

B. Federal, provincial, and territorial governments should leverage public funds to defray the costs of electricity system investments for ratepayers

The real or perceived risks of rising electricity rates could create challenges for electricity system transformations and the larger net zero transition. To mitigate these risks, federal, provincial, and territorial governments should use funds from their respective tax bases to defray the costs of electricity system investments for ratepayers.

Governments could provide support that would defray rate pressures in general, as well as in targeted ways that reduce costs for households experiencing, or at risk of, energy poverty.

Governments can provide these supports in a number of ways. For example, they could fund research, development, and demonstration projects; provide tax credits; co-fund large projects or infrastructure; or simply provide support directly to ratepayers. Providing subsidies can have pitfalls, particularly when they are not targeted at a clear market barrier (Ragan et al. 2017). But these challenges can be avoided when subsidies are coupled with the governance reforms in our next recommendation, which would help ensure investments defray costs for ratepayers in ways that are future-focused and cost-effective.

There are strong arguments to support government investment in electricity systems. First, since investments targeting emissions reductions benefit society broadly rather than just ratepayers alone, there is a case for sharing the costs more broadly as well. Second, governments are investing in a type of critical public infrastructure that will only grow in importance in a low-carbon world. And third, tax systems tend to be more progressive than ratepayer cost recovery, offering a fairer way of bearing investment costs. In addition, federal investment can provide an equalizing function, where provinces and territories that face the most costly transitions see greater benefits from federal support.

C. Provincial and territorial governments should flex their policy muscles to drive transformation of their electricity systems

Provincial and territorial governments can take considerable leadership in transforming their electricity systems, since they control many of the key policy levers. First, provinces and territories should implement their own carbon pricing policies and performance standards through equivalency agreements, so that they can implement policy that makes sense within their unique regional context. Second, they should issue directives and legislation mandating that regulators, public utilities, and system operators pursue climate goals. Third, to enable these actors to fulfil their updated mandates, provincial and territorial governments should develop comprehensive energy plans and commission independent pathway assessments to guide their work. Finally, provincial and territorial governments should remove or address formal and informal barriers to integration, including self-suf-

ficiency mandates, policies that disincentivize interregional integration and trade, and institutional culture and inertia.

D. Both orders of government should pursue greater coordination and integration using their respective policy tools

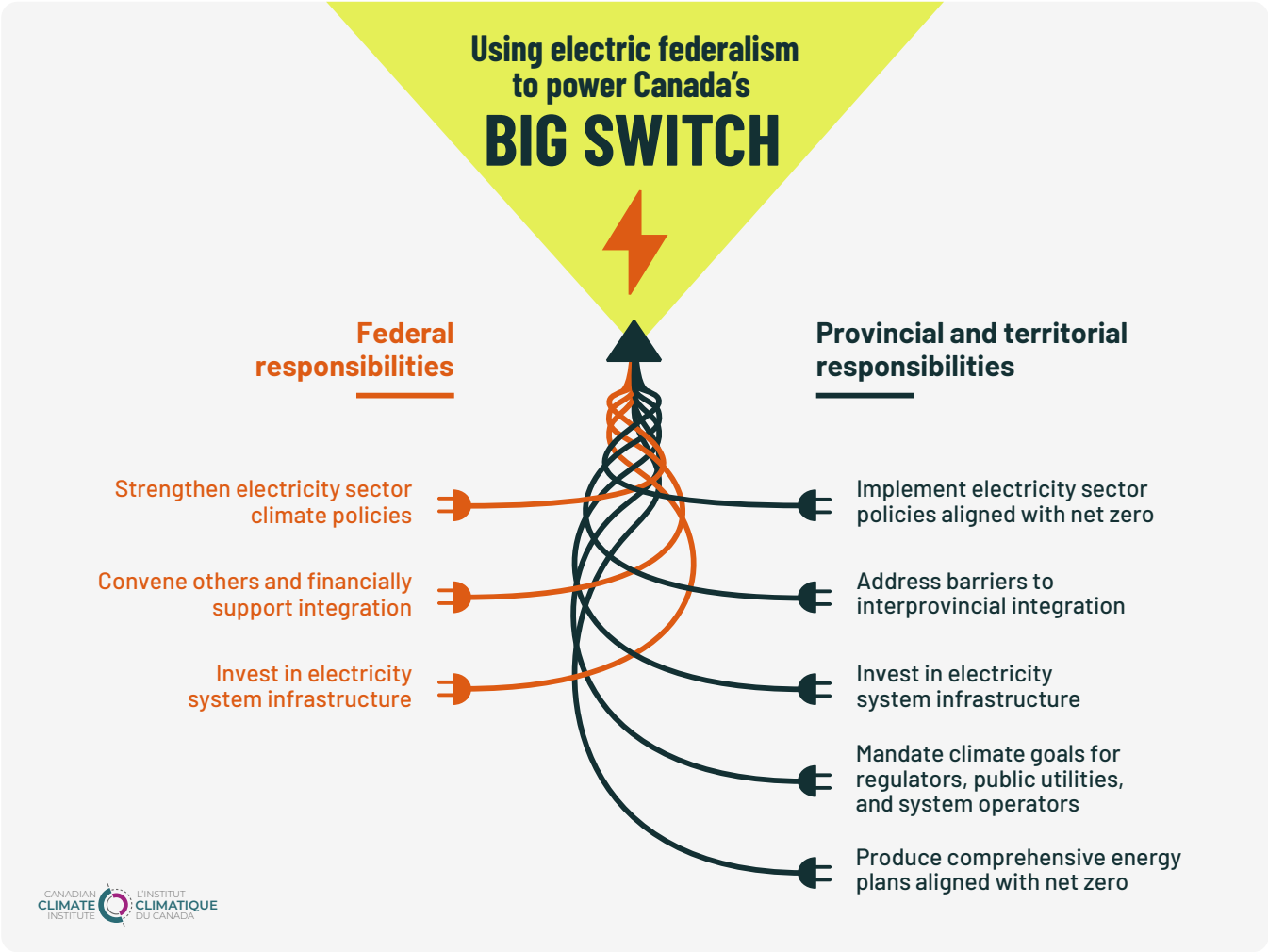
Nordic countries have successfully pursued greater coordination and integration of their electricity markets (McCarthy 2022). Canadian provinces and territories should similarly work bilaterally and multilaterally to integrate their electricity sectors, both by removing formal and informal barriers to integration and through new projects or planning initiatives. The federal government, for its part, should leverage its spending and convening powers—including the proposed Pan-Canadian Grid Council—to encourage greater coordination and integration of provincial and territorial systems.

Federal climate policies can help motivate greater integration, and federal convening and financial support can help incentivize it. But, ultimately, it is up to provinces and territories how much they choose to coordinate and integrate with their neighbours. As we discussed above, integration offers a cost-effective pathway for aligning Canadian electricity systems with net zero, so provinces should work to tap its considerable—and shared—benefits.

3.3 *Tying provincial, territorial, and federal actions together*

Our research finds that meaningful policy action across the four challenges requires *electric federalism*: coherent policy action from federal, provincial, and territorial governments that is capable of driving Canadian electricity systems toward alignment with net zero (see *Figure H*).

FIGURE H.



While there is a path forward where each order of government acts independently within its respective jurisdiction to implement the recommendations above, relying on the uncoordinated, independent initiative of each order of government means some critical policy actions might be slow to materialize. This risks putting the achievement of broader, longer-term climate targets in jeopardy, since resilient, cost-effective, non-emitting electricity systems are essential for enabling energy end-use electrification—a central component of every possible pathway to reaching net zero emissions (Dion et al. 2021).

Below, we discuss a potential coordinated approach that sees the federal government supporting and accelerating change while also respecting provincial and territorial jurisdiction over electricity.

E. The federal government should consider offering sustained, predictable financial support to provinces and territories to accelerate electricity system transformations, in exchange for certain high-level conditions being met

Such agreements would attach a limited number of high-level conditions to this potential financial support that tie together many of the recommendations above. These conditions include:

- updating the mandates of key provincial and territorial institutions,
- developing comprehensive energy plans and independent pathway assessments, and
- participating in inter-jurisdictional working groups, such as the proposed Grid Council.

Federal support would be conditional on provinces and territories developing these specific policies, plans, and assessments, but their content would be entirely at those governments' discretion. As long as such efforts were focused on developing a net zero energy system in the province or territory and provided sufficient detail, the federal government would leave provincial and territorial governments and institutions to determine *how* they envision their electricity systems aligning with net zero. With the above conditions in place, federal support would not have to be tied to any particular investment type, technology, or measure, but only to electricity system investment in general.

Provinces and territories, for their part, would have access to—and control over—federal funds that could help reduce pressure (or perceived pressure) on electricity rates. This is a significant benefit that could greatly facilitate electricity sector transformation. Without it, pressure from households and businesses to keep electricity affordable could risk delaying the provincial and territorial policy changes and investments required to modernize electricity systems and align them with net zero.

This kind of approach can offer a way for the federal government to enable and accelerate the transformation of provincial and territorial electricity systems in line with net zero, and in a way that makes sense

in the Canadian federation. If the federal government is serious about achieving net zero in the electricity sector by 2035 and in the economy as a whole by 2050, it should begin exploring this approach immediately and consider making it a key plank of its Budget 2023.

ANNEX

Stakeholder consultations

We wish to acknowledge the input and guidance we received during our engagement with a broad range of stakeholders, including:

Alberta Innovates
Alberta Utilities Commission
Algonquin Power & Utilities Corp.
AltaLink
Asia Pacific Economic Corporation
Association of Municipalities of Ontario
Association québécoise pour l'énegie renouvelable
ATCO
Atlantic Canada Opportunities Agency
Atlantic Chamber of Commerce
Atlantic Policy Congress of First Nations Chiefs Secretariat
Atlantic Provinces Economic Council
Atlantica Center for Energy
Baffin Regional Chamber of Commerce
BC Hydro
British Columbia Utilities Commission
Business Council of British Columbia
C.D. Howe Institute
CAMPUT: Canada's Utility and Energy Regulators
Canada Energy Regulator
Canada Grid
Canadian German Chamber of Industry and Commerce
Canadian Nuclear Association
Canadian Renewable Energy Association
Capital Power Corporation
Charlottetown Chamber of Commerce
City of Charlottetown
City of Halifax
City of Medicine Hat
City of Saskatoon
City of St. John's
City of Toronto
City of Vancouver
City of Winnipeg
Clean Energy BC
Clean Energy Canada
Clean Foundation
Climate Change Connection
Community Energy Association
Conboy Advisory Services
Council of Yukon First Nations
Counsel Public Affairs
Cowesses Ventures
David Suzuki Foundation
Delphi Group
Dunsky Energy Consulting
Ecology Action Centre
Ecotrust Canada
Efficiency Canada
Efficiency One
Electric Power Research Institute
Electricity Canada
Emissions Reduction Alberta
Energy and Materials Research Group at Simon Fraser University
ENMAX
ESMIA Consultants
Environment and Climate Change Canada
Federation of Prince Edward Island Municipalities
First Nations Power Authority
Fortis BC
General Electric Canada
Government of Alberta
Government of British Columbia
Government of Manitoba
Government of New Brunswick
Government of Newfoundland and Labrador
Government of Northwest Territories
Government of Nova Scotia
Government of Nunavut
Government of Ontario
Government of Prince Edward Island
Government of Quebec
Government of Saskatchewan
Government of Yukon
Greengate Power
Heartland Generation
Heritage Gas
Hydro One
Hydro Quebec

International Institute for Sustainable Development
Indigenous Clean Energy
Industrial Gas Users Association
Island Regulatory and Appeals Commission
Kanaka Bar Indian Band
Keppel Gate Consulting
Kisik Clean Energy
Kolesar Buchanan & Associates Ltd.
Manitoba Environmental Industries Association
Manitoba Hydro
Manitoba Public Utilities Board
Maritime Electric Company
Maritimes Energy Association
Metro Vancouver
Nunastsiavut Government
Nalcor
National Farmers Union - Region 6
Natural Forces
Natural Resources Canada
Navius Research
NB Power
New Brunswick Energy and Utilities Board
New Brunswick Energy Marketing Corporation
New Relationship Trust
Newfoundland and Labrador Board of Commissioners
Newfoundland and Labrador Environmental Industry Association
Newfoundland Power
Newfoundland and Labrador Hydro
Northwest Territories Association of Communities
Northland Power
Northwest Territories Power Corporation
Nova Scotia Power
Nova Scotia Utility and Review Board
NS Power
NS Utility & Review Board
Ofgem
Ontario Chamber of Commerce
Opportunities New Brunswick
Ontario Energy Board
Ontario Power Generation
Opportunities New Brunswick
Pacific Institute for Climate Solutions
PEI Energy Corporation
Pembina Institute
Polaris Strategy + Insight
Power Advisory LLC
Powerconsumer Inc.
Prairie Climate Centre
Propulsion Quebec
Qikiqtaaluk Corporation
Qikiqtani Inuit Association
Quebec Business Council on the Environment
Quebec Net Positive
QUEST
Régie de l'énergie du Québec
Region of Durham
Reshape Infrastructure Strategies
Rural Municipalities of Alberta
Saint John Energy
SaskPower
Saskatchewan Chamber of Commerce
Saskatchewan Environmental Society
Saskatchewan Urban Municipalities Association
Saskatoon Light and Power
Saskatchewan Rate and Review Panel
Sawridge First Nation
Smart Grid Innovation Network
Sustainable Energy Systems Integration & Transitions Group
Sustainable Waterloo Region
Toronto and Region Board of Trade
Toronto and Region Conservation Authority
Toronto Atmospheric Fund
Town of Canmore
Town of Digby
TransAlta
Transition Accelerator
Trottier Energy Institute
Toronto and Region Conservation Authority
Toronto Hydro
Waterpower Canada
Wind Energy Institute of Canada
Wrangellia Consulting

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